

Amendments to the Specification:

Please replace paragraph appearing at page 10, lines 7-21 with the following amended paragraph:

Furthermore, according to the present invention, an image processing apparatus for processing electronic image data comprising a plurality of components obtained by capturing an image via an optical system, comprises distortion correction processing means. The distortion correction processing means comprises: distortion-correcting-coefficient calculating means that calculates, for every component, a distortion correcting coefficient used for correcting the distortion aberration due to the optical system based on the distance from the center of distortion; and distortion-correction calculating means that corrects the distortion of the image data every component by using the distortion correcting coefficient every component calculated by the distortion-correcting-coefficient calculating means.

Please replace paragraph appearing at page 15, lines 12-25, bridging to page 16, at lines 1-21 with the following amended paragraph:

The image processing apparatus comprises: a CCD 1, serving as an image pickup element, which photoelectrically converts an optical subject image formed by an optical system and generates an electrical image pickup signal; a pre-processing unit 2 which performs pre-processing, such as correction of pixel defect or A/D conversion of the image pickup signal outputted from the CCD 1; a frame memory 4 which stores a frame image after procession by the pre-processing unit 2; a first data-order converting unit 5 which reads image data stored in the frame memory 4

every predetermined block via a bus 11, which will be described later, temporarily stores the data, and thereafter changes the reading order and outputs the data; an image processing unit 6, serving as an image processing unit, which performs predetermined image processing of the image data outputted from the first data-order converting unit 5; a distortion correction processing unit 7, serving as an image processing unit, which corrects the distortion of the image data after procession by the image processing unit 6; a second data-order converting unit 8 which temporarily stores every block the image data ~~every block~~ outputted from the distortion correction processing unit 7, and reads and outputs the data in the same direction as that read from the frame memory 4 by the first data-order converting unit 5; a JPEG processing unit 9 which compresses the image data outputted from the second data-order converting unit 8 by a compression format, such as JPEG; a memory card 10, serving as non-volatile storage means, which temporarily writes the image data compressed by the JPEG processing unit 9 via the bus 11, which will be described later, reads and inputs the written image data via the bus 11, and stores the data as an image file; the bus 11 which connects the circuits except for the CCD 1 to a CPU 3, which will be described later; and the CPU 3, serving as control means, which entirely controls the image processing apparatus including the above-described circuits.

Please replace paragraph appearing at page 20, lines 6-25, bridging to page 21, at lines 1-21 with the following amended paragraph:

Referring to Fig. 2, the distortion correction processing unit 7 comprises: an interpolating-position generating unit 21 that generates the coordinates (X, Y) of the target point; a distortion-correcting-coordinate converting unit 22 that

calculates the coordinates (X', Y') of the image data before procession of the distortion correction from the coordinates (X, Y) of the target point generated by the interpolating-position generating unit 21; a selector 23 that selects the coordinates (X, Y) outputted from the interpolating-position generating unit 21 in the case that the distortion correction processing is not performed and selects the coordinates (X', Y') outputted from the distortion-correcting-coordinate converting unit 22 in the case that the distortion correction processing is performed; a memory control unit 24 that controls the reading operation of the image data from the previous-stage processing block and further controls an inner memory unit 25, which will be described later, so as to send the image data of the peripheral pixels necessary for performing interpolating processing on the coordinates outputted from the selector 23; the inner memory unit 25 that stores the image data from the previous-stage processing block and outputs the image data of the peripheral pixels necessary for interpolation under the control of the memory control unit 24 to an interpolation calculating unit 26, which will be described later; and the interpolation calculating unit 26 that obtains the image data at the target point based on the image data in the neighborhood of the target point outputted from the inner memory unit 25 and the coordinates of the target point outputted from the selector 23 by using [[the]] Cubic interpolation or the like as mentioned above and outputs the obtained data to the subsequent-stage processing block.

Please replace paragraph appearing at page 24, lines 17-22, bridging to page 25, at lines 1-11 with the following amended paragraph:

Here, Figs. 3A to 3D are diagrams showing examples of the distortion aberrations upon capturing the image of the lattice subject via the optical system.

Applicant: Furukawa et al.
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Referring to Fig. 3A shows an example of a lattice subject. Since the conventional art considers up to the term of second degree, a barrel distortion aberration shown in Fig. 3B and a pincushion distortion aberration shown in Fig. 3C, which are caused upon capturing the image of the subject shown in Fig. 3A via the optical system, can be corrected. But, a curvilinear distortion aberration shown in Fig. 3D cannot be corrected. However, according to the first embodiment, as shown by the Formula 4, the degree up to that over the term of second degree of Z, that is, the term of fourth degree or the term of sixth degree is considered. Thus, it is possible to precisely correct the aberration with the to a high degree as mentioned above. Further, the term of the still higher degree may be considered.

Please replace paragraph appearing at page 29, lines 7-13 with the following amended paragraph:

In the operation of the second data-order converting unit 8, the image data is written from the distortion correction processing unit 7 to one of the memories 8a and 8b in the column direction (longitudinal direction). The image data is read from another memory in the column row direction (lateral direction) and is outputted to the JPEG processing unit 9.